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Further accuracy may be gained, however, by having at one's command a collection of the various salts; and when a certain one of these is suspected in the system, one may make a slide, or better, several slides of the suspected salt. One of these slides may be directly compared with the human material supposed to contain this substance, by means of a comparison eyepiece, which allows one to observe one-half of each field at the same time with one eye, thus presenting one of the most modern methods of comparing the unknown with the known, as shown in figure 7.

For still further identification, individual crystals may be removed from the slide with a coarse hair or fine glass needle and tested by the usual chemical methods.

The author feels that this method of studying the crystal formation would be of great value to the diagnostician, and that a course in micro-crystallography should be made a part of medical education.

Research Publishing Co., ARTHUR W. DOUBLEDAY.
Boston, Mass.

A NEW MOUNTING MEDIUM

All of the media in present use have some defects, and it is probable that a perfect medium will never be found, but I have endeavored to find one in which the most serious defects are eliminated.

Balsam and damar, dissolved in xylene, are ideal media for those objects which are adapted to them. The fact that xylene boils at a low temperature makes it easy to drive off air bubbles by very gentle heat. But it is necessary to have all objects, mounted in either balsam or damar, entirely free from water. There are many objects which can not withstand dehydrating. Many delicate tissues and organisms are almost destroyed from passing them through the different strengths of alcohol necessary for mounting in balsam or damar.

The refractive power of such media renders them unsuitable for some objects. Objects having about the same index of refraction as these media are almost or quite invisible after they are mounted. Again xylene balsam is never quite free from color if it has been exposed to the light.

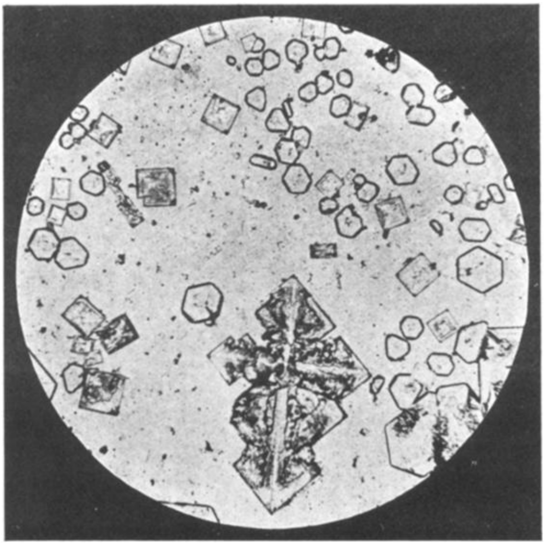

FIG 1. Potassium Chloride

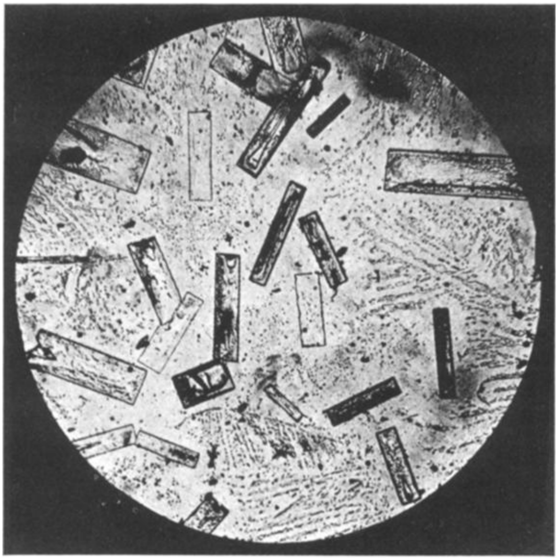

FIG. 2. Ammonium Sulphate

PLATE II

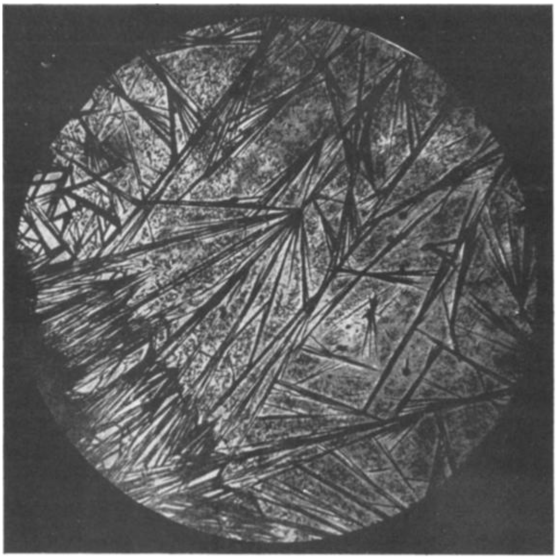

Fig. 3. Caffein

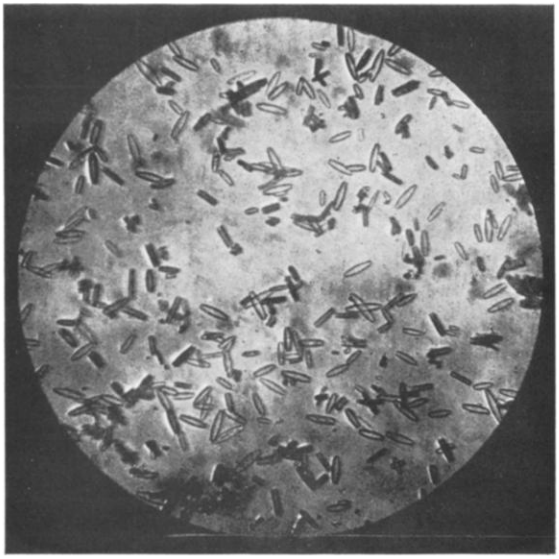

Fig. 4 Creatinin

Plate III

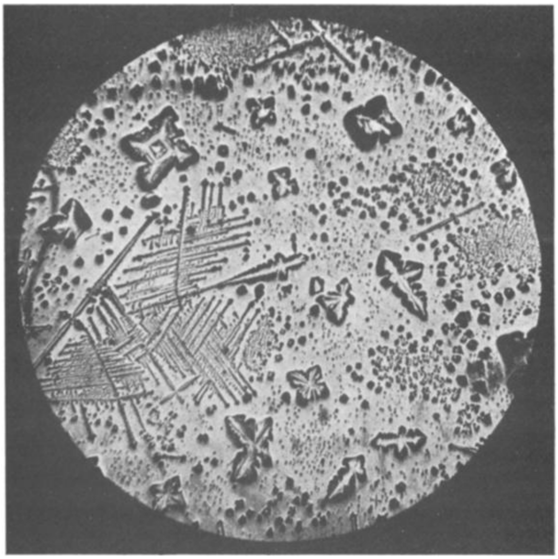

FIG. 5. Crystals from a Known Solution

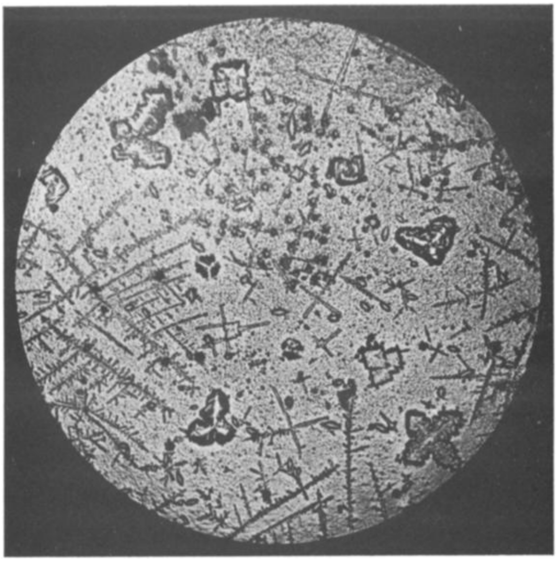

FIG. 6. Crystals from a Human Secretion

PLATE IV

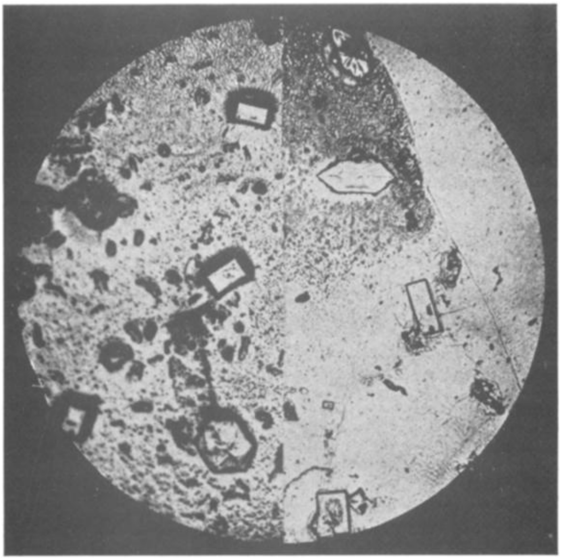

Fig. 7. Left half of photomicrograph presents crystals from Human Secretion: right half from a Known Solution.

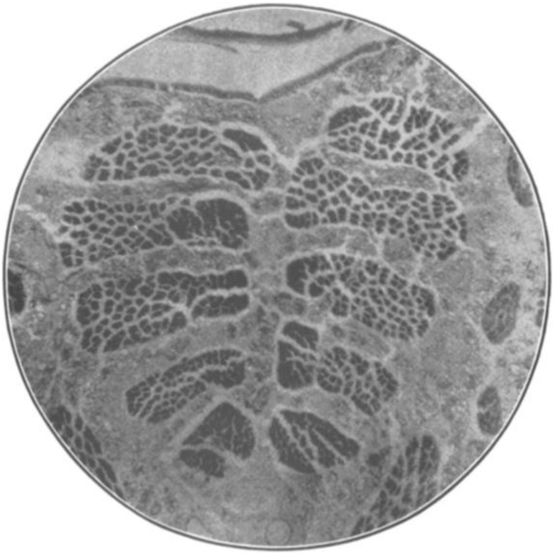

Fig. 8. Muscles in neck of Tussock Moth (see page 48).

PLATE V

With any of the media containing gelatine it is impossible to get rid of air bubbles. They cannot be driven off by heat without destroying the qualities of the medium. There are the same objections to media containing acacia. Neither of these media is miscible with alcohol.

A medium different from any of the ordinary kinds is needed for mounting some objects. The qualities desirable in such a new medium may be classified as follows: 1, It should be miscible with both alcohol and water; 2, It should be free from color; 3, It should be free from air bubbles, or nearly so; 4, It should have a refractive index differing from that of balsam etc.; 5, Gentle heat should carry off the bubbles, if they are present. 6, Gentle heat should not change its nature in any way; 7, It should harden spontaneously, or by the application of gentle heat.

I think I have discovered a medium that has all of the above mentioned good qualities except the last. It is made from confectioners glucose. This, as found in the market, is a gelatinous substance, very transparent and free from color. Probably in the process of manufacture it is strained through cotton cloth. At any rate there are some fibers in it. To remove these fibers it is necessary to dilute the glucose with water until it will pass through a paper filter. The water should be driven off by heat over a water bath until the glucose is considerably thicker than xylene-balsam. Then alcohol should be added until it is of the same consistency as xylene-balsam, or a little thinner. The glucose is not perfectly soluble in strong alcohol but is soluble in alcohol and water combined. If adding the alcohol produces a milky appearance it will be necessary to add a little water to make a clear solution, then the medium is ready for use.

Mounting with the medium is performed in the same way as with xylene-balsam except that it is not necessary to dehydrate objects. Gentle heat applied to the slide will not only drive out the air bubbles but it will also harden the glucose around the cover glass so as to hold it firmly. If this condition would persist, it would be very satisfactory; but unfortunately the glucose is hygroscopic and the moisture taken from the air will soften it so that the cover glass can be removed easily. To avoid this a ring of enamel can be spun around the edges of the cover glass easily and quickly, and then the preparation is a permanent one. Only one layer of enamel is necessary. I think any kind, or color, of enamel can be successfully used. I have used two different kinds and both seem satisfactory.

A precaution should be taken that the solution is not so thick that it will harden at the edge of the cover before the bubbles are all driven off.

I have been using this medium, and method of mounting, for about six months. The objects which I have mounted seem to be in perfect condition at present. If time and changing temperature should loosen the cover glasses I think that my method might be changed with advantage by putting a ring of gold size around first, and following this by a second coat, or a coat of enamel.

Lewiston, Maine. C. E. Norton, M. D.

A METHOD FOR CUTTING PLANORBIS EGGS

The eggs of Planorbis, a common pond snail, are found in clusters held together by tough enclosing membranes which contain a considerable amount of jelly. Surrounded by the jelly are perhaps a couple of dozen capsules, each filled with a yellow albumen mass in which the egg develops. These membranes and the albumen make it very difficult to section the entire cluster, so that it has usually been necessary to remove the eggs from the albumen and jelly. Holmes (Journal of Morph., Vol. 16, 1900) recommended for the process that they be teased out in physiological salt solution to which a trace of picric acid had been added.

The difficulties, however, in the process of staining and running through the alcohols of so small a number of eggs which are microscopic in size led to further experiments on cutting the eggs within the jelly mass. The procedure which was developed for this purpose has proven fairly successful, although certain precautions are necessary.

For fixing the eggs, Kleinenberg's picro-sulphuric has been chiefly employed. Owing to the tough membranes a longer time than is ordinarily given to mollusc eggs is necessary for the proper fixation; about one hour has proven a satisfactory time. The ad-